

Notice of Allowability

Application No.

10/698,463

Examiner

Faye Boosalis

Applicant(s)

SECUNDO ET AL.

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2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to submissions of 13 February 2006.
2. ☒ The allowed claim(s) is/are 1-47 and 49-56.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S COMMENT AND STATEMENT OF REASONS FOR ALLOWANCE**Comment on Submissions**

1. This communication is responsive to submission of 12 February 2006.

Allowable Subject Matter

2. Claims 1-47 and 49-56 are allowed.
3. The following is an examiner's statement of reasons for allowance:

Regarding independent claims 1 and 39, the prior art does not disclose or fairly suggest a thermal detection system or method for radiation sensing comprising: enhancing the IR absorption of the detector with an electrical mechanism by inducing a change in the index of refraction and in the index of change, correlated with a temperature of the temperature sensing element (TSE) consisting an electro-optic material layer, to optically read out the refraction index change to provide a TSE temperature.

The examiner notes that while it is known in the art for thermo-optic infrared system to comprise: infrared radiation directed onto detector (19) cause a temperature rise in absorber (19b), a consequent temperature rise in thermo-optical layer (19e), and a consequent change in the refractive index of (19e). The thickness of (19e) is such that it acts as a temperature-variable interference filter for read beam (16a). Therefore, the intensity of the reflected beam is modulated by the thermally-induced change in refractive index of the transducer material as enhanced by internal interference effects. The reflected beam passes back through lens (18) to beam splitter (15). A portion of this beam is reflected back towards laser (10_) and the rest passes on as beam (25) to lens

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(26), which lens focusses the beam onto detector (27). The output of detector (27) (i.e. photodetector) is therefore indicative of the infrared radiation falling onto detector (19) (see for example Bly et al -- US 4,959,546 -- Fig. 1 and col. 2, lines 34-50), the prior art does not suggest EO detectors measuring a refraction associated with a steady state temperature of the TSE.

Regarding independent claim 16, the prior art does not disclose or fairly suggest a thermal detection system or method for radiation sensing comprising: enhancing the IR absorption of the detector with an electrical mechanism by inducing a change in the index of refraction and in the index of change, correlated with a temperature of the temperature sensing element (TSE) consisting an electro-optic material layer, to optically read out the refraction index change to provide a TSE temperature.

The examiner notes that while it is known in the art for thermo-optic infrared system to comprise: infrared radiation directed onto detector (19) cause a temperature rise in absorber (19b), a consequent temperature rise in thermo-optical layer (19e), and a consequent change in the refractive index of (19e). The thickness of (19e) is such that it acts as a temperature-variable interference filter for read beam (16a). Therefore, the intensity of the reflected beam is modulated by the thermally-induced change in refractive index of the transducer material as enhanced by internal interference effects. The reflected beam passes back through lens (18) to beam splitter (15). A portion of this beam is reflected back towards laser (10_) and the rest passes on as beam (25) to lens (26), which lens focusses the beam onto detector (27). The output of detector

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(27) (i.e. photodetector) is therefore indicative of the infrared radiation falling onto detector (19) (see for example Bly et al -- US 4,959,546 -- Fig. 1 and col. 2, lines 34-50), the prior art does not suggest EO detectors measuring a refraction associated with a steady state temperature of the TSE.

Regarding independent claims 29 and 49, the prior art does not disclose or fairly suggest a thermal detection system or method for thermal imaging comprising: plurality of temperature sensing elements (TSE) each having an electro-optic (EO) material layer to enhance IR absorption of the detector with an electrical mechanism by inducing a change in the index of refraction and in the index of change correlated with a temperature of each individual temperature sensing element (TSE) to optically read out the refraction index change to provide a TSE temperature and a plurality of dummies wherein a pair composed of a TSE and a dummy are formed to simultaneously apply optical reading to the TSE and the dummy pair, to measure refraction index to read a temperature difference between the (TSE) and the dummy.

The examiner notes that while it is known in the art for thermo-optic infrared system to comprise: infrared radiation directed onto detector (19) cause a temperature rise in absorber (19b), a consequent temperature rise in thermo-optical layer (19e), and a consequent change in the refractive index of (19e). The thickness of (19e) is such that it acts as a temperature-variable interference filter for read beam (16a). Therefore, the intensity of the reflected beam is modulated by the thermally-induced change in refractive index of the transducer material as enhanced by internal interference effects. The reflected beam

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passes back through lens (18) to beam splitter (15). A portion of this beam is reflected back towards laser (10) and the rest passes on as beam (25) to lens (26), which lens focusses the beam onto detector (27). The output of detector (27) (i.e. photodetector) is therefore indicative of the infrared radiation falling onto detector (19) (see for example Bly et al -- US 4,959,546 -- Fig. 1 and col. 2, lines 34-50), the prior art does not suggest EO detectors measuring a refraction associated with a steady state temperature of the TSE.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Boosalis whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800